

More than 1,200 top executives attend NASA JSC Inspection and learn about center technologies. Story on Page 3.



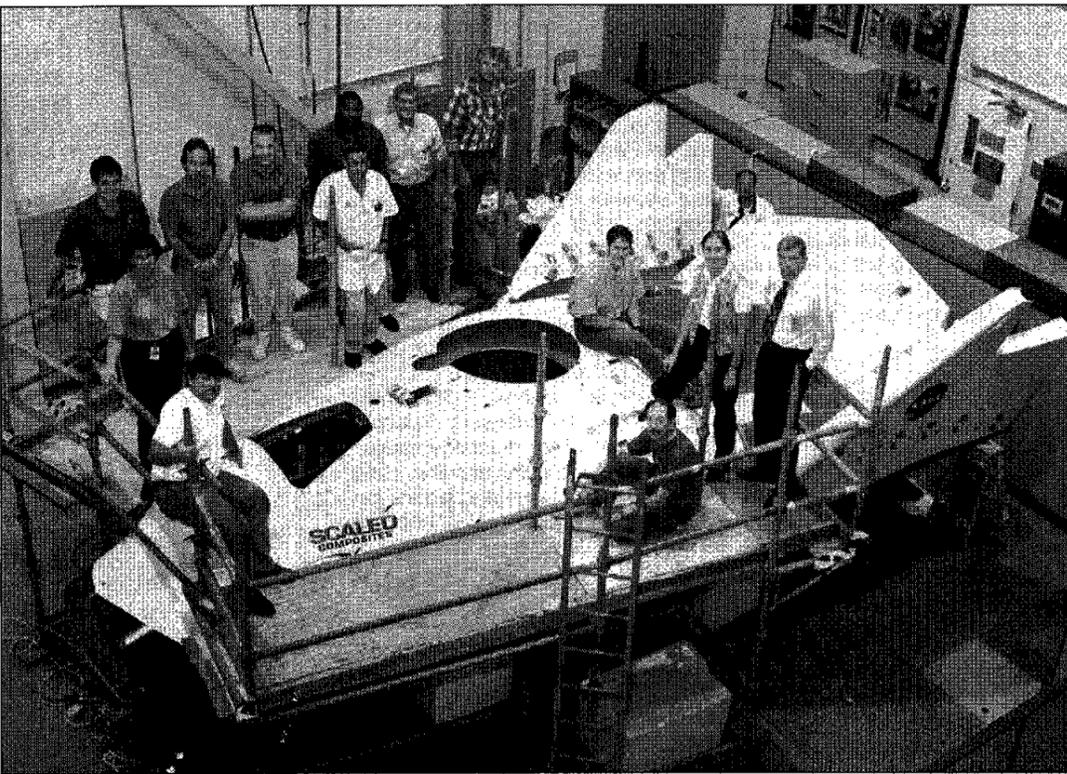
Astronaut Shannon Lucid receives the Congressional Space Medal from President Clinton. Story on Page 4.

# Space News Roundup

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No. 47



The X-38 team takes a break from designing and flight-testing the International Space Station crew return vehicle in Bldg. 36. The X-38 could become the first new human spacecraft to travel to and from orbit in the past two decades and be developed at a fraction of the cost of past human space vehicles.

JSC Photo by Robert Markowitz

## JSC tests new human spacecraft

*Design stresses efficiency, versatility*

By James Hartsfield

JSC engineers are designing and flight-testing a prototype spacecraft that could become the first new human spacecraft to travel to and from orbit in the past two decades, a spacecraft developed at a fraction of the cost of past human space vehicles.

The most immediate application of the project, designated the X-38, is to develop technology for a prototype emergency crew return vehicle for the International Space

Station. But the project also is aimed at developing a crew return vehicle design that could be modified for other uses, such as joint U.S. and international human spacecraft.

The goal is to develop the vehicle with an unprecedented eye toward efficiency, taking advantage of available equipment and already developed technology for as much as 80 percent of the spacecraft's design.

"Using available technology and off-the-shelf equipment can significantly reduce costs," said X-38

Project Manager John Muratore. "The original estimates to build a capsule-type CRV several years ago amounted to more than \$2 billion in total development cost. The X-38 concept could develop and build four operational CRVs, vehicles that are more capable and versatile than earlier designs, for less than a quarter of that."

In the early years of the station, a Russian Soyuz spacecraft will be attached to the station as a

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## Columbia lands with wealth of satellite data

By Karen Schmidt

Scientists will reap the rewards of STS-80 during the coming months from the two satellite payloads *Columbia* and its crew bring home as engineers inspect a stuck hatch that prevented the crew from performing two space walks.

Commander Ken Cockrell, Pilot Kent Rominger and Mission Specialists Tammy Jernigan, Tom Jones and Story Musgrave successfully deployed and retrieved both the ORFEUS-SPAS and Wake Shield Facility satellites, bringing scientists more data than expected. At mid-week, *Columbia* was expected to return to Kennedy Space Center's Shuttle Landing Facility at 6:33 a.m. Thursday. Mission managers brought the shuttle home a day early due to predictions of deteriorating weather conditions on Friday at both KSC and Edwards Air Force Base.

Mission managers gave astronomers an extra day to collect data from the ultraviolet astronomy satellite. Early Wednesday morning the crew plucked ORFEUS-SPAS from its orbit and placed it back in *Columbia's* cargo bay.

Cockrell and Rominger guided *Columbia* to a flawless rendezvous with ORFEUS-SPAS, and Jernigan reached out with the shuttle's robot arm to grapple the German observatory at 2:26 a.m. CST. After hours of tests for the Orbiter Space Vision System, the free flyer was secured back in the cargo bay at 7:14 a.m. Monday, the crew spent time

monitoring onboard experiments and talking with reporters.

"This flight has shown us that every once in awhile life throws you a little bit of a curve, and we would like to think that it's not the curve that counts but how we react to it," Cockrell said. "I think we're going to take advantage of having this mechanical failure onboard to teach us more about hatches and make us better prepared for future flights."

That curve—a jammed hatch that prevented Jernigan and Jones from taking two space walks—could not be conclusively identified by the ground team during the mission and managers decided Sunday not to risk damage to the seals or hatch during the flight by forcing the hatch open.

"There is always the potential that the seals could be damaged," Jones said Monday. "We

didn't want to damage the hardware for the objectives of this EVA, which could be rescheduled and flown on another flight. The fact that our hatch failed on this flight is a good reminder that space flight is a complex business and we have to pay particular attention to all the details including the ones we have taken for granted on past flights.

"It is good that we had this hatch failure on this mission in a sense that the objectives can be rescheduled and reprogrammed for later accomplishments. We want to make sure we get to the bottom of this hatch problem when we land so that

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## JSC offers buyouts to employees until February

JSC once again is offering buyouts—until Feb. 3—with some organizations limiting the number of employees that will be allowed to leave to ensure safe and timely space flight.

"Earlier in the year, we took a critical look at whether a buyout was necessary at the center, and concluded that our budget situation was such that we could reach our targets without having a buyout," said Harvey Hartman, director of Human Resources. "However, we have now been told that we will have to achieve lower workforce targets earlier than planned. In light of this decision, it is no longer possible to reach the lower levels without offering separation incentives."

The JSC plan is designed to meet new budget and staffing levels while continuing to assure that the center meets critical program commitments and that it is done safely, Hartman said. The buyout is designed to preserve JSC's core engineering and scientific workforce. The buyout is a lump-sum payment based upon service and salary history.

In order to qualify for a buyout, employees are eligible if they are a permanent civil servant, have been with NASA for at least one year, and voluntarily retire or resign by Feb. 3. "There are a few categories of employees who are absolutely excluded from the buyout," Hartman said. "We're excluding these categories because we would have to hire replacements from outside the agency, and the law prohibits us from doing so."

The excluded categories include astronauts, medical doctors, pilots, grade 13 and below certified flight controllers, trainers and

flight design analysts in Mission Operations. Employees who are eligible for the buyout include all those assigned to the Business and Information Systems Directorate. Six employees of the Space Station Program Office can take the buyout with priority given to grade 14 and above employees.

No more than 10 percent of the employees in the Space Shuttle Program Office, Space Operations Office Phase 1 Program Office and EVA Project Office will be given the

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## Space conference set

JSC Director George Abbey will open a national space conference at 8:30 a.m. Monday, beginning a three-day forum on bridging the space frontier to the next century.

The American Astronautical Society conference, entitled "Space Exploration and Development: Beyond the Space Station," will be held Monday-Wednesday at South Shore Harbour Conference Center. A series of technical sessions will be offered free to badged JSC civil servants, beginning with "Space Exploration and Development" at 9 a.m. Monday. The second technical session will cover "Space Transportation" from 1:30-5 p.m.

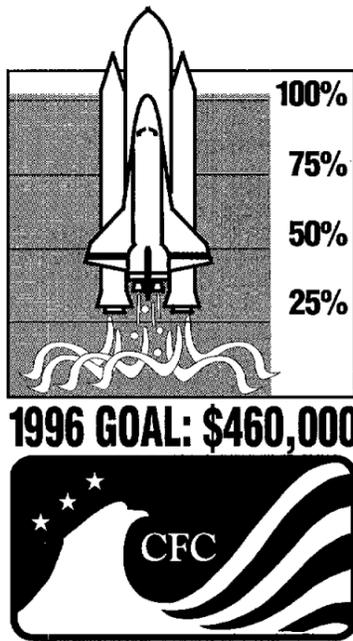
The Exhibit Hall will be open from 10 a.m.-5 p.m. Tuesday, with the first technical session on "Space Exploration Beyond Low-

Earth Orbit" set for 8 a.m.-noon. Session four will cover "Space Resources" from 2-5 p.m.

Wednesday, the Exhibit Hall once again will be open from 10 a.m.-4 p.m. The first technical session of the day will cover "Space Industrialization into the Next Century" from 9 a.m.-noon. The final technical session of the conference will cover "International Workshop on Moon and Mars Exploration: Identification of Synergisms."

There will be a final panel at 4 p.m. Wednesday to discuss "Benefits and Detriments of Cooperation for Lunar and Mars Mission Programs."

The entire program for the conference is located on the Internet at: <http://www.lance.colostate.edu/~willy/ceiss.html>



## Pathfinder launches to Mars

NASA's Mars Pathfinder spacecraft left Earth Wednesday to begin its mission to study the red planet.

Pathfinder was successfully launched at 12:58 a.m. CST Wednesday from Cape Canaveral Air Station in Florida. The spacecraft separated from the Delta II launch rocket on time and is now on its path to Mars.

The Mars Pathfinder will deliver a small rover vehicle, Sojourner, to the red planet for the first time in 20 years. Pathfinder will demonstrate an innovative approach to landing a spacecraft and rover the surface of Mars.

The primary objective of the mission is to test the low-cost method of delivering a spacecraft, science payload and free-ranging rover to the surface of the red planet. Pathfinder's nominal mission life-

time is about 30 Earth days. Pathfinder will study ancient rocks to understand the nature of the early environment on Mars and the processes that have led to the features that exist today.

NASA has selected an ancient flood plain on Mars as the landing site for Pathfinder. Centuries ago, when water flowed on Mars, great floods inundated the landing site, located on a rocky plain in an area known today as Ares Vallis. The site is 527 miles southeast of the location of Viking Lander 1, which in 1976 became the first spacecraft to land on Mars. The spacecraft, scheduled to arrive at Mars on July 4, 1997, will parachute down to Ares Vallis at the mouth of an ancient outflow channel chosen for the variety of rock and soil samples it may present.

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## Ticket Window

The following discount tickets are available for purchase in the Bldg. 11 Exchange Store from 10 a.m.-2 p.m. Monday-Thursday and 9 a.m.-3 p.m. Friday. For more information, call x335350 or x30990.

- Aeros vs. Las Vegas Thunder:** 7 p.m. Dec. 20. Presale tickets cost \$15.
- EAA Christmas dinner/dance:** The EAA Christmas dinner dance will be at 7:30 p.m. Dec. 14 at the Gilruth. Tickets cost \$25 per person.
- EAA Spring Break Special to Rome:** March 8-15, \$1,099 double occupancy. \$200 deposit required. Final payment due Jan. 8.
- EAA Belize Resort Trip:** Available through Dec. 15. Cost is \$472 per person double occupancy. \$100 deposit required with final payment due 30 days before departure.
- Sam Houston Race Park Track Pack:** \$10 value pack for \$5.25, includes Club Level seating, program, tip sheet, admission, preferred parking and gift shop discount.
- Space Center Houston:** Adult \$8.75; children (4-11) \$6.25, annual membership \$25.95, family membership (up to four) \$59.95.
- Movie discounts:** General Cinema, \$4.75; AMC Theater, \$4.50; Sony Loew's Theater, \$4.75.
- Franklin Planner refills:** now taking orders for 1997 calendars.
- Stamps:** Book of 20, \$6.40.
- Entertainment '97 books:** Cost is \$25.
- Metro tickets:** Passes, books and single tickets available.

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## Gilruth Center News

**Sign up policy:** All classes and athletic activities are first come, first served. Sign up in person at the Gilruth Center and show a NASA badge or yellow EAA dependent badge. Classes tend to fill up two weeks in advance. Payment must be made in full, in exact change or by check, at the time of registration. No registration will be taken by telephone. For more information, call x30304.

**EAA badges:** Dependents and spouses may apply for photo identification badges from 7:30 a.m.-9 p.m. Monday-Friday; and 8 a.m.-4 p.m. Saturdays. Cost is \$5. Dependents must be between 16 and 23 years old.

**Hatha Yoga:** A stress relieving, stretching and breathing exercise routine to unite body, mind and spirit. Classes meet from 5:30-6:30 p.m. Thursdays. Cost is \$35 for eight weeks.

**Nutrition intervention program:** A six-week program to learn more about the role diet and nutrition plays in health, including lectures, private consultations with a dietitian and blood analysis. Program is open to all employees, contractors and spouses. For more information call Tammie Shaw at x32980.

**Defensive driving:** One-day course is offered once a month. Pre-registration required. Cost is \$25.

**Stamp club:** Meets at 7 p.m. every second and fourth Monday in Rm. 216.

**Weight safety:** Required course for employees wishing to use the weight room will be offered from 8-9:30 p.m. Dec. 17. Pre-registration is required. Cost is \$5.

**Exercise:** Low-impact class meets from 5:15-6:15 p.m. Mondays and Wednesdays. Cost is \$24 for six weeks.

**Aikido:** Martial arts class meets from 5:15-6:15 p.m. Tuesday and Wednesday. Cost is \$35 per month. New classes begin the first of each month.

**Aerobics:** Classes meet from 5:15-6:15 p.m. Tuesdays and Thursdays. Cost is \$32 for eight weeks.

**Ballroom dancing:** Beginner classes meet from 7-8:15 p.m. Thursdays. Advanced classes and classes for beginner-intermediate and intermediate meet from 8:15-9:30 p.m. Cost is \$60 per couple.

**Country and Western dancing:** Beginner class meets 7-8:30 p.m. Monday. Advance class meets 8:30-10 p.m. Monday. Cost is \$20 per couple.

**Fitness program:** Health Related Fitness Program includes a medical examination screening and a 12-week individually prescribed exercise program. For more information call Larry Wier at x30301.

JSC

## Swap Shop

Swap Shop ads are accepted from current and retired NASA civil service employees and on-site contractor employees. Each ad must be submitted on a separate full-sized, revised JSC Form 1452. Deadline is 5 p.m. every Friday, two weeks before the desired date of publication. Ads may be run only once. Send ads to Roundup Swap Shop, Code AP2, or deliver them to the deposite box outside Rm. 181 in Bldg. 2. No phone or fax ads accepted.

### Property

Sale: Brook Forest, custom home, energy effici, 3BRDR, den, LV/DR, wet bar, island kitchen, pool, by owner, \$199.9k. 488-3468.

Lease: Middlebrook, 3-2-2, formal, fenced, fans, good cond, \$900 mo + dep. 281-486-8551.

Sale/Lease: Heritage Park Estates, 3-2-2, 1900 sq ft, 2 story, cul-de-sac, formal LV/DR, family room, new paint. Tony, x38839.

Sale/Lease: University Trace, condo, 2-2.5, DRM, 2 cov'd parking spaces, W/D, new refrig, \$675 mo + \$47.9k. 280-0991.

Sale: Lots in Sommerset Place, Alvin, not in flood plain, city water/sewer, \$5,950 ea, possible owner finance. 997-2280.

Sale: Wooded lot 90'x135'. Taylor Lake Estates, can finance, \$39.5 obo. Must sell ASAP. Don, x38039 or 333-1751.

Sale: Cemetery lots, Memorial Oaks Cemetery, 2 sets of 2 spaces. 903-584-3575.

Rent: Condo, Winter Park, CO., near ski area, 2-2, furn, hot tubs and pool, sleeps 6. 488-4453.

Rent: South Tahoe cabin, sleeps 8, 3-2, wood stove, cable TV/VCR, microwave, modern kitchen, W/D, \$85 night. x41065 or 326-2866.

### Cars & Trucks

'93 Jeep Cherokee Sport 4 dr, 2 WD, collar, auto-OD, A/C, cass, new battery, black/gray, 39k mi, ex cond, \$12,775 obo. Dan, x34640 or 482-7550.

'91 Toyota Camry, 4 dr, maroon, w/dark gray interior, auto, A/C, AM/FM/cass, ex cond, \$7k. 282-3229 or 286-4547.

'91 Honda Civic LX, 4 dr, charcoal gray/dk gray inter, auto, A/C, fully loaded, 45k mi, 1 owner, \$7k obo. 409-297-8432.

'87 Honda Accord LX, 4 dr, auto, A/C, P/S, P/B, P/W, cruise, \$4.5k. 488-7771.

'89 Suzuki Samurai, very good cond, 4x4, soft top, 5 spd, A/C, AM/FM/cass, JL trim pkg, rear seat, new exhaust/clutch/tires, lift kit, \$4.2k obo. 334-3960.

'87 Mazda RX-7 turbo, sunroof, access, ex cond, \$3.9k obo. Tom, 244-9775.

'80 Pontiac Bonneville, 4 dr, diesel, looks and runs good, inter slightly worn, \$800 obo. Tom, 244-9775.

'94 Mazda B-2300, A/C, AM/FM/cass, 5 spd, 24.3k mi, \$6.7k. Ray, 332-3243.

'92 Toyota Corolla, 60k mi, A/C, P/S, cass, alarm, 2 new tires, well maintained, \$6.5k. 486-4839.

'91 Honda Civic 4 dr, white, navy inter, great cond, 38k mi. 554-5492.

'89 Chevy Beretta 2.8, V6, cruise/tilt, great cond, \$3.5k obo. 337-1311.

'81 Ford Mustang, 6 cyl, 3.0L, good work/school car, \$495. Walter, x37332 or 534-2358.

'86 Toyota PU, great cond, low mi, long bed, \$4.9k. 996-1124.

'84 Mazda RX7, 131k mi, clean, new AM/FM/cass, new brakes, \$2k. 486-8551.

'89 Honda Accord LXi, 5 spd, hatchback, P/W, P/S, P/B, 62k mi, AM/FM/cass, low mi, ex cond, \$5,895 obo. Sheri, x48652 or 480-3904.

'94 Chevy extend Astro van w/Tiarna conver, 7 pass w/4 capt chairs, P/W, P/L, ABS, front/rear A/C, \$14.2k obo. x34842 or 474-7982.

'81 Chevy Chevette, A/C, AM/FM/cass, 143k mi, \$600 obo. Hugh, x31714 or 554-5412.

'93 Ford Ranger XLT, 5 spd, A/C, AM/FM/cass, white exter, ex cond, sliding rear window, \$5.9k. 409-925-4244.

'92 Ford Ranger XLT, white, 2.3L, 5 spd, A/C, bed cover, CD player, 67k mi, ex cond, \$5,995. 944-5604.

'71 Karmann Ghia, \$9k invested sell \$7.5k firm. x39125 or 409-948-2924.

'84 Chevy Suburban Silverado, 1/2 ton, 3 seats, very good cond, 153k mi, A/C, \$2.5k. x45792 or 326-5340.

'84 Pontiac Parisienne, 305 V8, very good cond, A/C, 149k mi, \$1.3k. x45792 or 326-5340.

'88 Mazda, 4 dr sedan, std, A/C, \$1.8k obo. 333-2751.

'84 Corvette, auto, removable top, silver, good cond, \$7.5k. 333-9113.

'87 Nissan Sentra XE, 4 dr sedan, cloth inter, A/C, brown, AM/FM, good cond, \$2.8k. 474-2745.

'93 Geo Metro, 4 dr, 3 cyl, maroon, \$5.2k or \$177 mo. 489-8759.

'94 Honda Accord LX, ex cond, 27.5k mi, white extertan cloth inter, auto, 4 dr, ABS, dual airbags, pwr, AM/FM/cass, A/C, \$15k obo. Gus, x33425 or 286-3402.

'76 Ford 2000 diesel tractor, \$4,950; '80 Ford 340A diesel tractor, \$5,550. 997-2280.

'86 Pontiac Fiero parts, doors, hood, sunroof, fenders, rims/tires, windshield, much more, make offer. Keith, x35191 or 996-8318.

### Boats & Planes

Cat w/sails, 18', trailer, \$900. 474-4742.

Searay Bowrider, 21', 260Hp Mercuriser V8, I/O, new '96 Alpha I outdrive, 35 Watt/channel AM/FM/cass w/CD changer controls, bimini top, cover, tandem galv trailer, ex cond, \$7.5k obo. Keith, x35191 or 996-8318.

### Cycles

'88/'89 ATR 250 motor-cross dirt bike, ex cond, w/racing enhancements, \$1.5k obo. 992-1552.

### Audio Visual & Computers

Compaq computers, 1 PC-server, 486/66 12Mb RAM, and 240Mb HD w/kybd, no monitor, \$700 obo; 1 Deskpro 486, 4Mb RAM/240Mb HD w/many interface cards and keyboard, no monitor, \$400. x32920 or 992-9203.

### Today

**Computer fair:** The NASA-JSC Exchange will host a Computer Fair from 8 a.m.-4p.m. Dec. 6, 9, and 10 in the Bldg. 3 cafeteria. For details call Karl Schuler at x33031.

**Cafeteria menu:** Special: baked meatloaf. Total Health: baked potato. Entrees: chicken fajitas, ham steak, pork and beef eggrolls, steamed fish, Reuben sandwich. Soup: seafood gumbo. Vegetables: stewed tomatoes, seasoned spinach, cut corn, macaroni and cheese.

### Saturday

**Christmas tree sale:** The Employee Activities Association will host a Christmas tree sale from 8:30-11 a.m. Dec. 7 at the Gilruth Center softball field No. 4. Tickets cost \$18 and must be purchased in advance at the Exchange Store. No tickets will be sold at the gate. For details call X35350.

### Monday

**AAS conference:** The American Astronautical Society will host its national conference Dec. 9-11. Today's topics include Space Exploration and Development from 9 a.m.-noon; Space Transportation from 1:30-5 p.m. JSC civil servants may attend any technical session free by showing their badges. For details call Glen VanZandt at x33069.

**Book fair:** The Employee Activities Association will host a book fair from 8 a.m.-3 p.m. Dec. 9-11 in the Bldg. 3 Cafeteria. For more information call Teresa Sullivan at x38970.

**College briefing:** The University of Houston will hold a briefing from 9:30-10:30 a.m. Dec. 6 in Bldg. 45, Rm. 119. Charles Dalton, dean of Cullen College of Engineering will discuss degree opportunities. For more information call Kaz Farley-Hall at x33075.

**Cafeteria menu:** Special: Italian outlet. Total Health: roast beef au jus. Entrees: chicken a la king, enchiladas with chili, vegetable lasagna, steamed pollock, French dip sandwich. Soup: split pea and ham. Vegetables: Brussels sprouts, oriental vegetables, buttered carrots, lima beans.

### Tuesday

**AAS conference:** The American Astronautical Society will host its national conference Dec. 10-11. Topics include Space Exploration Beyond LEO from 8 a.m.-noon; Space Resources from 2-5 p.m. JSC civil servants may attend any technical session free by showing their badges. For details call Glen VanZandt at x33069.

**BAAC meets:** The Bay Area Aero Club will meet at 7 p.m. Dec. 10 at the Houston Gulf Airport in League City. For more information call Jerry Adair at x38058.

**Cafeteria menu:** Christmas Special: Turkey, dressing, Waldorf salad, giblet gravy, cranberry sauce, Italian green beans almondine, candied yams, roll, butter and a drink for \$3.50. Apple and mince cobbler available for \$.75.

### Wednesday

**AAS conference:** The American Astronautical Society will host its national conference Dec. 11. Today's topics include Space Industrialization into the Next Century from 9 a.m.-noon; IAA International Workshop on Moon and Mars Exploration from 2-5 p.m. JSC civil servants may attend any technical session free by showing their badge. For details call Glen VanZandt at x33069.

**Speech contest:** The Lockheed-Martin Houston Chapter of the National Management Association

and the Bay Area Toastmasters will sponsor an American Enterprise speech contest from 11 a.m.-1 p.m. Dec. 11 at the Gilruth Center, Rm. 216. For details call Gwen Gilliam at x34584.

**MAES meets:** The Society of Mexican American Engineers and Scientists will meet at 11:30 a.m. Dec. 11 in the Bldg. 3 Cafeteria executive dining room. For details call Michael Ruiz at x38169.

**Astronomy seminar:** The JSC Astronomy Seminar will meet at noon Dec. 11 in Bldg. 31, Rm. 129. Wendell Mendell will discuss "Space University 1996." For more information call Al Jackson at x35037.

**Cafeteria menu:** Special: pepper steak. Total Health: stir fry pork with rice. Entrees: liver and onions, stir fry pork with rice, steamed fish, western special, Reuben sandwich. Vegetables: steamed broccoli, yellow squash, macaroni and cheese, vegetable sticks.

### Thursday

**Airplane club meets:** The Radio Control Airplane Club will meet at 7:30 p.m. Dec. 12 at the Clear Lake Park Community Bldg. For details call Bill Langdoc at x35970.

**Cafeteria menu:** Special: chicken fried steak. Total Health: baked potato. Entrees: beef tacos, steamed pollock, baked chicken, catfish special. Soup: navy bean. Vegetables: spinach, cut corn, breaded okra, pinto beans.

### Friday

**Cafeteria menu:** Special: tuna noodle casserole. Total Health: baked potato. Entrees: steamed salmon steak, baked chicken, fried cod fish, ham steak. Soup: seafood gumbo. Vegetables: French cut green beans, cauliflower with cheese, green peas, black-eyed peas.

White iron and polished brass daybed, \$80 obo; beige sofa, great cond, \$150 obo.

Chest and chest armoire, 6 drawers, pecan finish, solid wood. 488-2652.

Livingroom chair, \$30 obo; computer desk w/ hutch and printer stand, \$50. Lisa, x40213 or 992-7302.

Hotpoint refrig, S/S w/icemaker, 21.9 cu ft, 28.5"D, 32.5"W, 5.5"H, almond, works fine, \$285. 281-480-8051.

Broyhill country style king sz BDR suite, \$600; antique love seat, nice, \$400; rattan dbl Papasan chair w/2 stools, no cushions, 475. 488-5218.

Kenmore electric dryer, lg capacity, works great, \$65. 281-332-2375.

Sleeper sofa and love seat, country blue, good cond, \$400. Randy, x48271 or 488-1672.

Queen sz waterbed w/6 drawer pedestal, bookcase hdbd, sheets, pillows, \$100. Eddy, x39570 or 335-1192.

Two desks, 30"x47", hutch for 1, \$125; bookcase, 36"x38", \$20; super single waterbed, \$200. x31197 or 992-6406.

Bissell carpet sweeper, \$15; ornate antique blond mirror w/shelves, \$100. 480-3424.

### Wanted

Want female to share 3/2/2 house, available 1/97, non-smoker, no pets, \$400 mo + dep \$200. 484-8640.

Want 1 roommate to share 3-2-5-2, University Green townhome, new kitchen, W/D, cable, \$325 mo + 1/2 util. Scott, 286-7808.

Want roommate, Tranquillity Lake townhouse, 1-1, \$350 mo + 1/2 util, avail immediately. Eddy, x39570 or 335-1192.

Want roommate, Seabrook, lg 4-2-5-2, separate loft/living area and phone, cable/fax, W/D, \$375 mo. 474-4742.

Want roommate to share new 2500 sq ft 3-2-2 home, non-smoking male or female, South Shore Harbor, gameroom, home theater sys, lg kitchen, all household privileges, \$300 mo + 1/3 util. Brian, 713-488-4383.

Want personnel to join VPSI vanpool departing South Braeswood Park and Ride lot at 6:50 a.m. for JSC and offsite locations, 7:30 - 4:30 shift. Susan Gaynor, 282-5447 or Al Rudder, x34997.

Want Personnel to join VPSI Vanpool departing Meyerland Park and Ride lot at 7:05 a.m. for JSC, shift 8 a.m. - 4:30 p.m. Don Pipins, x35346.

Want VGA or SVGA monitor. Juan, x38117.

Want qualified instructors to teach 2 children ages 5 and 9, French language 2 - 4 hrs per wk. Mark, x31713 or 281-461-9103.

Want coffee table, 30" sq or round w/storage drawers/doors; want stepping stones for garden. 281-480-8051.

Want Space Saver treadmill w/assisted lift sys, 0-10 mph, motorized incline. Charlotte, x35259.

Want double wide baby jogger for expanding family. Pete, x40016.

### Miscellaneous

'95 Go-cart 5Hp, Briggs&Straton, under warranty, \$600 neg. 489-8759.

Craftsman 10" radial arm saw, \$200. Nick, x32313 or 559-1323.

Double stroller, \$60; baby bedding, lampshade, mobile, wall decor, \$70; playpen, \$10; Bouncy chair, \$8; infant car seat/carrier, \$15; Diaper Genie, \$10; changing table pad, \$5; baby bath tub, \$3, ex cond. 291-9225.

Boy's winter jacket, ex cond, sz 4-5, \$15; scuba equip, 1 sm hood, \$25; 1 Hawaiian sling hand spear, \$50; 2 pr fins; 1 pr sm gloves; concrete down spout splash block, \$2 ea; red fiberglass truck topper for '85/'95 Toyota. 480-3424.

Demetrius designer wedding gown, w/veil, sz 8/10, \$500 obo. Charlene, x30185.

White beaded Victorian wedding dress, sz 10/12 fitted, v-back, long sleeves, matching veil w/bustled train, \$375. 713-998-3802.

Wedding dress, Alfredo design, white, sz 11/12, beautiful dress, \$400 obo. x35852 or 474-2393.

Designer wedding gown, white satin, long sleeved, beads, sequins, slip, \$600 obo. 244-1330 or 409-935-8923.

Wedding dress, white, tee length, sz 8, pearls and beaded bustier, \$200 obo. x39125 or 409-948-2924.

Pool table, 7', gray felt, access, great shape. Kim, 280-8529.

Whole papershell pecans, \$2 lb. x36080.

Camper cover, aluminum, sliding windows, \$375; weight bench, \$40. Bill, x32131 or 554-6242.

Bedliner, \$75; camper shell, fiberglass, gray, from '87 Ford Ranger, \$200. 305-4266.

Stairclimber, \$50. Shelley, x37824 or 409-943-4168.

Sideline trampoline, 7'x14'will deliver, \$275. Hugh, x31714 or 554-5412.

Groove-A-Swing golf swing trainer, \$100 w/video; exercise slant board, ex cond, \$20. 488-4453.

Boy's Huffy bicycle, 12 spd, \$75 obo; 2 wood interior doors, \$10 ea; blue fabric corner table w/glass top, \$15; 220V squirrel cage blower, ex cond, \$50; nylon snow ski bag, \$5; snowchains, 13'-14', \$10. 332-2453.

Complete set of diving gear, all in ex cond, \$450. x39409 or 335-0112.

Russian gifts for Christmas, beautiful handmade fabric dolls, wooden stacking dolls, lacquered broaches, etc. Dennis, x34405 or 532-3312.

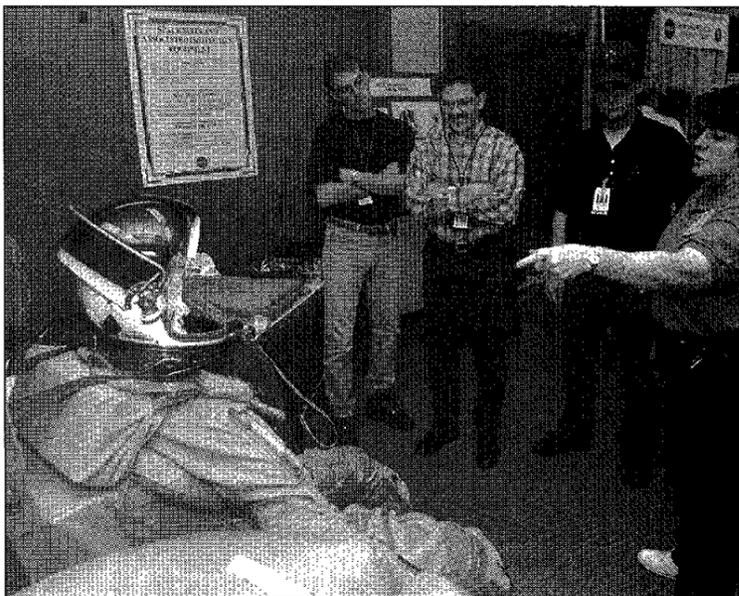
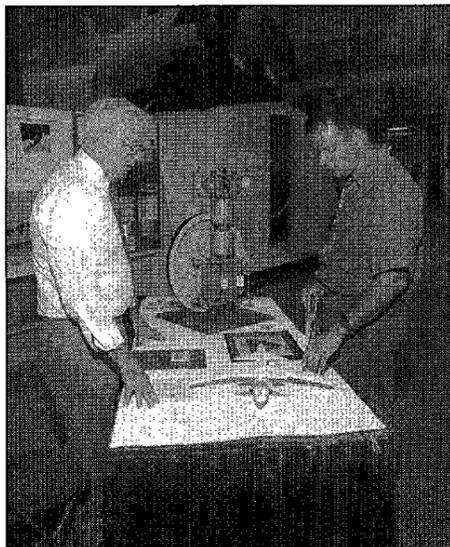
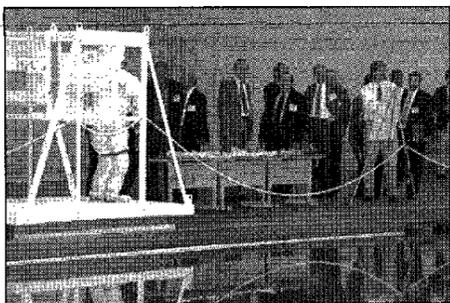
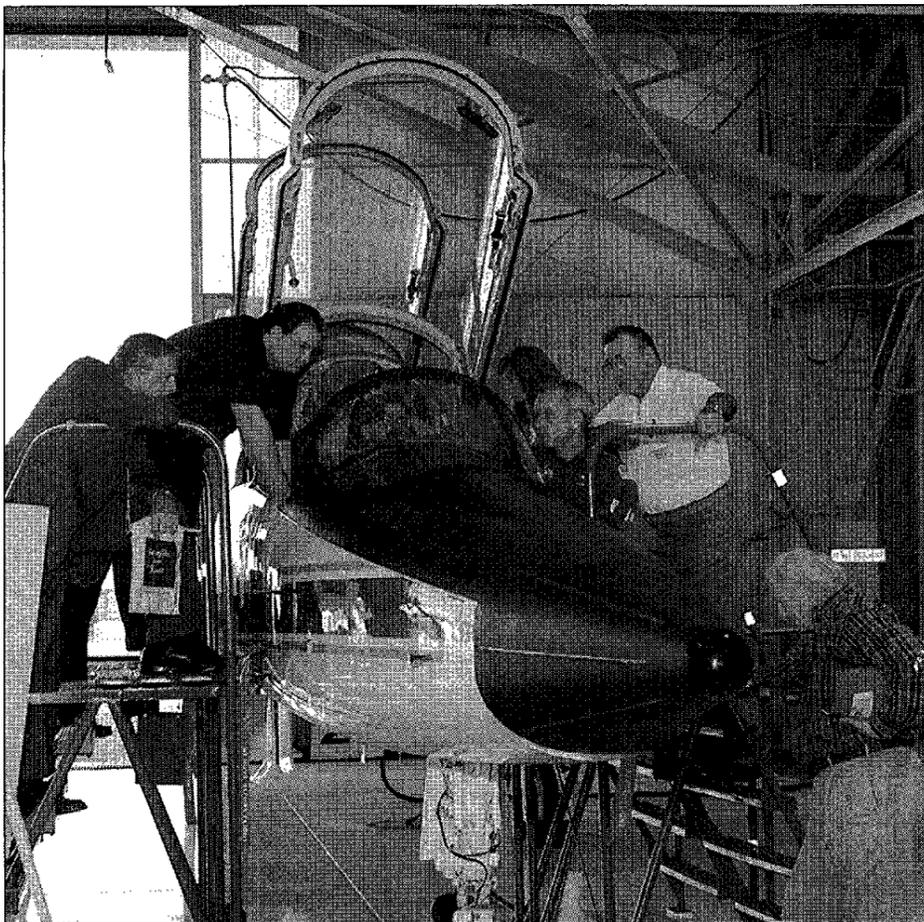
Go-Cart, 5Hp, \$400; soccer shoes, \$45; Starter jacket, \$40; Pro skateboard, \$20; Pet Porter, \$15; bike helmet, \$10; Dolye baseball hit trainer, ex cond, \$30; 2 kids offshore life jackets, \$40. x33137.

Body by Jake, AB and Back Plus exercise equipment, ex cond, \$90. 488-4464.

Continental Airlines air voucher, good thru March '97, \$100. x32264 or 488-2184.

RT ticket on American Airlines, Houston-Hobby to Oakland, CA, leaving 12/21 1:30 pm, returning 12/31 4:00 pm, \$125 obo. Tony, x38839.

Men ski boots, sz 8, racing pants, sz 30, Pre 190 skis; ladies ski jacket, med; 2 pr after ski boots, sz 6, 2 pr bibs, sz 10. x37787 or 422-6369.



# Trading Technology

## NASA JSC Inspection Day reaps technology rewards for business, space scientists

Last month's NASA JSC Inspection was successful in allowing JSC to share its technology with business, and it produced a spinoff of its own, allowing businesses to share their technology with the center.

More than 1,200 top executives from companies in 28 states took advantage of the opportunity to learn about JSC's missions, technologies and facilities.

"Our center employees should take great pride in the inspection and technology they presented to our visitors," JSC Director George Abbey said. "The NASA JSC Inspection was an important step in helping assure that industry, other government organizations and the public reap the benefits of our investment in the space program."

"The comments we received through exit surveys and personal remarks made directly to me, gave JSC very high marks on the content of the exhibits and demonstrations, the information we shared about JSC programs and missions and our efforts to transfer the technology developed here to the private sector. Above all we received high marks and many, many comments on the courtesy, the tremendous competency and enthusiasm of our people for their work," Abbey said.

Organizers report that invited guests came from the manufacturing, engineering, medical, architecture, chemical, transportation, petroleum, energy and computer industries and from cities as disparate as Dallas, Orlando, Seattle and New York City.

"The Inspection Days concept seemed to be an overwhelming success," wrote Jimmy Grotfelty, director of the state of Texas technology policy. "It will surely help send a message of NASA's cooperation and expertise to our Texas residents and communities."

"All the fine people at JSC went all out to make sure the technology of the center was on its best display," wrote David Carr, chairman of the Texas Aerospace Commission to his colleagues. "We hope that there will be many more Inspection Days at JSC and I urge everyone to make our friends aware of NASA's great capability for technology commercialization."

Numerous success stories are filtering in from the volunteers who supported the exhibits and demonstrations. But one of the more successful stories from Inspection Day comes from the Manufacturing, Materials and Process Technology Division.

"During the two-day event we got a chance to share a lot of our technologies with other business," said Division Chief Frank Benz. "We also were happy to learn that businesses were willing to share their technologies with us."

One exhibit on display from the division was the circuit writer. Electronics technician Randy Roman described to visitors how JSC is the only beta test site in the country for this system, that allows JSC to develop prototype circuit boards for use in flight and ground system hardware. A visitor from IBM saw the exhibit and was impressed with the capabilities of the circuit writ-

er and how NASA is advancing in this electronic area. He asked Roman if JSC could benefit from technology that would improve the time required to conduct functional testing. Roman and his colleagues agreed that such a system would save hundreds of hours in the development of circuit boards. As a result of Inspection Day, JSC will be working with IBM in the months to come to identify technologies that will shorten the time required to get circuit boards from the development stage to manufacturing.

Abbey added that employee involvement is what made the event success.

"I want to express my thanks to all of the exhibitors, facility hosts, volunteers and inspection staff members that did such a tremendous job as witnessed by the many favorable comments we received about their knowledge and understanding of their fields and their ability to suggest possible applications for NASA developed technology to help these visiting executives solve problems or develop products," Abbey said. "This is exactly what we hoped to accomplish, and each and every one of those who pitched in and made this event an unqualified success should take great pride in their accomplishments."

- From top to bottom, left to right;
- 1) Several visitors check out NASA's T-38 training aircraft avionics upgrade at Ellington Field;
  - 2) Robert Brogdon of the International Space Station Program Office discusses the International Space Station with visitors;
  - 3) Dan Barta, right, of the Crew and Thermal Systems Division, explains closed-environment plant growth development. JSC grows plants in closed environments for atmosphere revitalization;
  - 4) Several business leaders take time out to visit the Neutral Buoyancy Laboratory at the Sonny Carter Training Facility;
  - 5) Joe Riccio of the Manufacturing, Materials and Process Technology Division demonstrates a new laboratory devoted to manufacturing very small parts;
  - 6) Tom Grace of the Advanced Programs Office discusses the Reusable Lunar Transfer Vehicle with a JSC employee. The vehicle is designed to shuttle astronauts from low-Earth orbit to the Moon's surface and back;
  - 7) From left, White Sands Test Facility Manager Grady McCright explains the New Mexico facility to a JSC employee as Ray Melton talks about the shuttle reaction control system thruster to a visitor;
  - 8) Jerry Wiese of Johnson Engineering shows visitors the equipment used to help the astronauts simulate weightlessness;
  - 9) Peg Halford of Lockheed-Martin, who supports the Crew Escape Equipment group, shows visitors how astronauts use crew escape equipment during missions;
  - 10) Mark Cintala of the Earth Science and Solar System Exploration Division gives a preview of the evidence discovered by JSC scientists that strongly suggest life on Mars existed

# X-38 vehicle uses off-the-shelf technology to reduce cost

(Continued from Page 1)

lifeboat. But, as the size of the crew aboard the station increases, a return vehicle like the X-38 that can hold up to six will be needed.

The X-38 design uses a lifting body concept originally developed by the Air Force's X-24A project. Following the jettison of a deorbit engine module, the X-38 would glide from orbit unpowered like the space shuttle and then use a steerable, parafoil parachute, a technology recently developed by the Army, for its final descent to landing. Its landing gear would consist of skids rather than wheels.

"Just because it is off-the-shelf technology doesn't mean it is old technology. Many of the technologies we are using have never

before been applied to a human spacecraft," Muratore said. "We are out to prove that we can produce a highly versatile human spacecraft for significantly less cost than has ever been done before."

Although the design could one day be modified for other uses such as a crew transport vehicle, the X-38 would strictly be used as a return vehicle in its current design. It is baselined with only enough life support supplies to last about nine hours flying free of the station in orbit. The spacecraft's landing will be totally automated, although the crew will have the capability to switch to backup systems, control the orientation in orbit, pick a deorbit site, and steer the parafoil, if necessary. The X-38 has

a nitrogen gas-fueled attitude control system and uses batteries for power.

The first vehicle airframe was delivered to JSC in September, where it is now being outfitted with avionics, computer systems and other hardware in preparation for drop tests next year at the Dryden Flight Research Center. Full-scale, unpowered flight tests are to begin in February with "captive carry" flights in which the vehicle will remain attached to the NASA B-52 aircraft. Free-flight drop tests, also unpowered, are planned for May.

Further testing could include an unpowered space flight test in early 1999, and the new century could see the ship attached to the International Space Station. It is estimated

that the total projected cost of the X-38's development through the completion of two test vehicles could be less than \$80 million. About 100 people are working on the project.

"By building this ourselves, we are going to have a better understanding of the problems contractors experience when they build vehicles for us, and we will have a detailed set of requirements for the contractor. Using civil servants is among the most efficient ways to perform a small project like this, as well," Muratore said. "This gets NASA back to its research and development roots, the type of hands-on work that was done when it was NACA, the National Advisory Committee on Aeronautics, before the space age began."

## EAA elects new members, sets holiday activities

The November general assembly meeting of the Employees Activities Association elected members and sets dates for holiday activities and the 1997 JSC picnic.

Bob Musgrove was elected as vice president of athletics and Ron Davis was elected vice president of youth activities. Ginger Gibson retained her position as president as did Jessie Gillmore as secretary.

EAA representatives also voted on the location of the JSC annual picnic for 1997 with a unanimous vote for Astroworld. Members also voted to receive a free "Waterworld" ticket with the purchase of a regular picnic ticket, a change from last year's free "Holiday in the Park" ticket. The picnic will be held from 11 a.m.-8 p.m. Apr. 6. Tickets will cost \$15 for the first 3,100 tickets and \$21 after these tickets are sold. Astroworld season pass holders can pay \$7 to attend the picnic.

Employees who attended JSC's annual picnic last year may now redeem their free "Holiday in the Park" ticket. The park is open from noon-8 p.m. Saturdays and Sundays until Dec. 21. Starting Dec. 21 and running through Jan. 5, the park will be open every day from noon-8 p.m. On Dec. 31 the park will stay open until midnight and feature a 30-minute show on Main Street near Astroworld's entrance and fireworks to ring in the new year.

The EAA also will sponsor several holiday activities this month.

Tickets are on sale now at the Exchange Store for the Christmas tree sale that will be held at 8:30-11 a.m. Saturday at the Gilruth Center's softball field No. 4. Employees may purchase a ticket for a five to eight foot tree for \$18.

Santa will be on hand to greet employees and their children and refreshments will be available. Volunteers are needed to unload trees. To volunteer, call Ann Patterson at x33367.

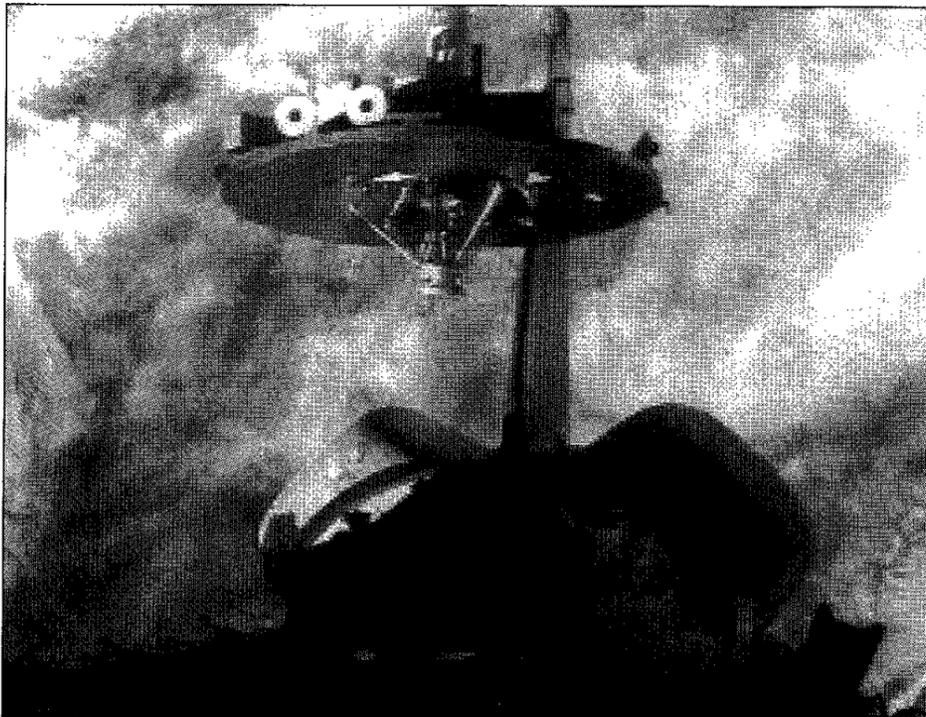
The Children's Christmas party will be held from 10 a.m.-noon Dec. 14 at the Gilruth Center ballroom and gym. Children will have the opportunity to have their picture taken with Santa along with a variety of other activities. Tickets cost \$4 for children and \$1 for adults. Tickets are on sale at the Exchange Store until Dec. 12.

For more information on the tree sale or children's party, call the Exchange Store at x35350.

The Christmas dance will begin at 7:30 p.m. Dec. 14 at the Gilruth. The Aubrey Tucker Orchestra will perform in the ballroom. Tickets cost \$25 and includes a prime rib dinner. Beer and wine will be available at \$1.75 and soft drinks for \$.50. Tickets are on sale at the Exchange Store. Ticket sales will end at 2 p.m. Wednesday.

The Aubrey Tucker Orchestra also will perform in the Gilruth Center ballroom for the New Year's dinner dance set to begin at 7:30 p.m. Dec. 31. Tickets cost \$27.50 and includes a prime rib dinner, party favors and a champagne toast at midnight. Beer and wine will be available at \$1.75 and soft drinks for \$.50. Tickets are now on sale and will end at 3 p.m. Dec. 27.

For more information on the dances, call Mavis Ilkenhans, 244-9644.



NASA Photo

Wake Shield scientists reported the maximum seven thin film growths of semiconductor material were completed during the three days the satellite flew free of *Columbia* surpassing its major objectives for the mission. The materials were grown in an ultravacuum 100 to 1,000 better than any seen on Earth.

## Wake shield surpasses expectations

(Continued from Page 1)

future missions that depend on successful operations of the hatch, like Mir visits and our station construction, can proceed without having to worry about that potential problem. We will learn and go on," Jones said.

Jernigan and Jones took advantage of the weightless environment to test a space station power tool they would have used during their space walks on the middeck of *Columbia*.

While disappointed at not being able to fulfill objectives, Jernigan said the successes of the two satellites made up for the hatch problem.

Wake Shield scientists reported the maximum seven thin film growths of semiconductor material were completed during the three days the satellite flew free of *Columbia*, surpassing

its major objectives for the mission. The satellite also was perched atop the arm for about six hours as scientists gathered data on using atomic oxygen to grow aluminum oxide films.

"We have had many successes on this flight," Jernigan said. "We had a successful deploy of the ORFEUS-SPAS complement of telescopes on flight day 1 and those telescopes are taking data on stars in our galaxy and many, many exotic astronomical objects so that is a very very exciting and serving program. We had a successful deploy of the Wake Shield whose materials processing facility worked extremely well. In spite of our disappointment about the EVA activity we are still very pleased to be a part of this flight and very pleased with the success of this mission."

## JSC to feature book sale, computer fair, choirs in Bldg. 3 cafeteria

The JSC Exchange, the Employee Activities Association and the Equal Opportunity Program Office are sponsoring several events in the Bldg. 3 cafeteria this month.

A computer fair will be held from 8 a.m.-4 p.m. today, Monday and Tuesday in the Bldg. 3 cafeteria. Two of the vendors who have been involved with the center's recent computer "block buys" will be partic-

ipating, and they are offering special deals to employees. There also will be a representative from the Discovery Toys-Software Line that features educational software for kids on Monday and Tuesday during lunch hours.

For more information on the computer fair, call Karl Schuler at x33031 or reference the fair's home page at the following URL: [http://hro.jsc.nasa.gov/hro/eaa/The\\_EAA\\_Computer\\_Fair.HTML](http://hro.jsc.nasa.gov/hro/eaa/The_EAA_Computer_Fair.HTML)

Computer\_Fair.HTML

The Exchange will be hosting another "Reading is Fun" Book Fair from 8 a.m.-3 p.m. Monday-Wednesday in the Bldg. 3 cafeteria. For details about the book sale call Teresa Sullivan at x38970.

In addition, the EEPO will sponsor Christmas entertainment during lunch time from Dec. 12-20 in the Bldg. 3 cafeteria. The entertainment includes choirs from Austin High

School, Worthing High School, C.E. King High School, JSC Patriotic Choir, Bearington Private School and other groups. Again this year, the U.S. Marine Corps will collect toys for the "Toys for Tots" program. JSC employees can drop off their gifts at the JSC Bldg. 3 cafeteria between Dec. 13-20.

These events are open to all NASA civil servants, contractors and retired personnel.

## Career Transition Assistant Program can assist buyout employees

(Continued from Page 1)

opportunity to take the buyout. Within each of these organizations, if more than 10 percent of the employees apply, approval will be given to administrative professionals first, followed by individuals in staff positions at the directorate or division levels. Next will come employees at remote sites, then senior executive service employees, followed by grades 14 and 15 employees, grade 13 and all others.

"In the case of 'ties' within these groups, approval will be given to employees with the most service, as measured by their Federal service computation dates," Hartman said.

In addition, up to 15 employees centerwide in support staff positions classified in NASA Class Code 500 will be eligible.

Senior Executive Service employees also will be eligible, except those directly involved in Space Flight Operation Contract transition. Employees who serve in staff (e.g., technical assistant, special assistant, etc.) or other individual contributor positions in directorate or division level offices also can take the buyout. Employees with duty stations at Downey, Palmdale, Huntington Beach, and Canoga Park, Calif., Kennedy Space Center and any employee working in a professional administrative position classified in NCC 600 also are eligible.

To apply for the buyout, employees must submit an application, available in Employee Services, Bldg 45, Rm. 140.

If employees are in a category with no limitations (for example, a

professional administrative position but not in one of the organizations with a percentage or numerical limitation), they may apply any time through Feb. 3. Upon confirmation of eligibility, employees may separate any time, but no later than Feb. 3.

Applications for employees in a category with limitations must be received by 5 p.m. Dec. 13. By Dec. 16, applications will be prioritized and approved.

After Dec. 13, if categories with limitations have not been fully subscribed, applications will be approved on a first-come, first-served basis up to the established limits. Once eligibility is confirmed, employees may separate anytime through Feb. 3.

"There are several important considerations you should take into account as you decide whether or

not to take the buyout," Hartman said. "First, you cannot be reemployed by the federal government for the next five years—in either a paid or unpaid status—unless you pay back the full amount of the buyout. Second, you may not enter into a personal services contract with the government. Third, you may take federal health benefits coverage into retirement only if you have been continuously enrolled since March 30, 1994."

JSC's Career Transition Assistant Program out placement center is available to employees for up to six months after leaving. Employees may contact the CTAP at x34300 for more information. Questions about the buyout can be answered by Human Resources Representatives or Employee Services at x32681.